NASA TECH BRIEF

Portable Machine Welding Head Automatically Controls Arc

The problem:

A requirement to improve weld repair quality and simplicity. Previously, weld repairing was accomplished by either manual means or by in-station machine welding, or a combination of both. The in-station machine repairs had to be made from the same side and with the same tool as for the original weld, thus posing weld penetration control problems.

The solution:

A portable weld tool that provides full automatic control of the four basic fusion type machine-weld functions (arc voltage, current, wire feed, and electrode travel speed) in all welding attitudes. The equipment can make machine repairs out-of-station and on the side opposite the original weld.

How it's done:

Universal vacuum pads mount the machine to all but the most irregular surfaces. A synchronous motor drives the weld head by means of a worm-type reduction gear in response to inputs from a weld program-

mer that senses the correct weld function parameters by the arc voltage performance.

Notes:

1. With this technique, less material must be removed in eliminating inclusions than was the case with prior methods.
2. This device is readily adaptable to commercially available straight polarity dc weld packs and current capacity (weld penetration capability) is limited only by the torch size employed.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B67-10272

Patent status:

No patent action is comtemplated by NASA.

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